Dataset: CTD data from ARSV Laurence M. Gould LMG1110 in the Southern Ocean from November to December 2011 (Salp_Antarctic project)

Project(s): Population ecology of Salpa thompsoni based on molecular indicators (Salp_Antarctic)

Abstract: Hydrographic data from 20 CTD casts in the Southern Ocean around the South Shetland Islands and Palmer Archipelago, Western Antarctic Peninsula in November 2011. For a complete list of measurements, refer to the supplemental document 'Field_names.pdf', and a full dataset description is included in the supplemental file 'Dataset_description.pdf'. The most current version of this dataset is available at: http://www.bco-dmo.org/dataset/559174

Description: CTD downcasts from LMG-1110 in the Antarctic in November, 2011.

This is from the cruise report (see LGM1110 deployment page for link) and particulary pertains to the Fluorescence data that were collected:

"Preliminary CTD Results: A total of 20 CTD stations were occupied and sampled during the cruise. Hydrographic data were collected in all sampling regions of the study. Casts were sent to the shallower of 1,000 m or 5-10 m above the bottom. The primary fluorometer was mis-calibrated (had the wrong scale factor in the calibration/processing file), so fluorescence data from the first four (or five) stations (Stns #22, #7, #8, #11) had to be re-processed with the correct scaling factor. Examination of the *.cnv file showed which casts had the miscalibrated data, as the max reading for fluorescence was ~ 0.05 mg/m3. For nearly every other station, maximum fluorescence readings were > 1.0 mg/m3. A secondary fluorometer was added to the CTD rosette between Stns #11 and #12, which verified that the issue was with the scale factor in the CTD processing software."

The data that are served have warnings about fluorescence numbers in the headers of the casts at Stations 22, 7, 8 and 11.

Variables that were part of the data that have been rendered invisible from the data online are: Elapsed time in seconds, modulo error count (always zero), and nbin (number of scans per bin). Those numbers are available upon request.

IEDA has published a DOI for another version of this dataset: 'Bucklin, A., (2015). 'Calibrated Hydrographic Data from Drake Passage acquired with a CTD during the Laurence M. Gould expedition LMG1110 (2011). doi: 10.1594/IEDA/318146.

Deployment Information

Deployment description for ARSV Laurence M. Gould LMG1110

Deployment description for ARSV Laurence M. Gould Cruise 19

UNOLS STRS record: http://strs.unols.org/Public/diu_cruise_view.aspx?cruise_id=127242 The primary science objectives of the cruise are to examine genome-wide patterns of gene expression, target gene expression levels, and patterns of population genetic diversity and structure of the Antarctic salp, Salpa thompsoni in relation to biological and physical environmental parameters in the Western Antarctic Peninsula region. High-frequency acoustics data will be used to provide information about the distribution of salps, krill, and other zooplankton. Sampling from shelf and oceanic waters between 0 and 2,000 meters will take place at selected stations using a 1-meter^2 MOCNESS to characterize the planktonic assemblage, and a Reeve net to collect live material for molecular and biochemical analysis. Environmental parameters to be measured include standard hydrographic variables (temperature, salinity, and depth), as well as fluorescence and turbidity. Water samples will be collected using a CTD rosette to determine chlorophyll concentration. An additional science objective is to develop a method of using acoustics to assess the abundance and distribution of salps in the Southern Ocean. Cruise Data Report

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Instrument Information

Instrument	Primary Temperature Sensor
Description	Calibration Page of the primary sensor with model and serial numbers. Calibration Page of the secondary sensor with model and serial numbers.
Generic Instrument Name	Sea-Bird SBE-3 Temperature Sensor
Generic Instrument Description	The SBE-3 is a slow response, frequency output temperature sensor manufactured by Sea-Bird Electronics, Inc. (Bellevue, Washington, USA). It has an initial accuracy of +/- 0.001 degrees Celsius with a stability of +/- 0.002 degrees Celsius per year and measures seawater temperature in the range of -5.0 to +35 degrees Celsius. more information from Sea-Bird Electronics

Instrument	Conductivity sensors
Description	Calibration sheet for primary conductivity sensor with model and serial numbers. Calibration sheet for secondary conductivity sensor with model and serial numbers.

Generic Instrument Name	Sea-Bird SBE-4 Conductivity Sensor
Generic Instrument Description	The Sea-Bird SBE-4 conductivity sensor is a modular, self-contained instrument that measures conductivity from 0 to 7 Siemens/meter. The sensors (Version 2; S/N 2000 and higher) have electrically isolated power circuits and optically coupled outputs to eliminate any possibility of noise and corrosion caused by ground loops. The sensing element is a cylindrical, flow-through, borosilicate glass cell with three internal platinum electrodes. Because the outer electrodes are connected together, electric fields are confined inside the cell, making the measured resistance (and instrument calibration) independent of calibration bath size or proximity to protective cages or other objects.

Instrument	Dissolved Oxygen sensors
Description	Calibration sheet for primary Dissolved oxygen sensor with model and serial numbers. Calibration sheet for secondary Dissolved oxygen sensor with model and serial numbers. (This calibration sheet is not well reproduced.)
Generic Instrument Name	Sea-Bird SBE 43 Dissolved Oxygen Sensor
Generic Instrument Description	The Sea-Bird SBE 43 dissolved oxygen sensor is a redesign of the Clark polarographic membrane type of dissolved oxygen sensors. more information from Sea-Bird Electronics

Instrument	CTD
Description	The Sea-Bird 911+ offers real-time operation via sea cable telemetry, includes a solid state memory module, and has a maximum depth of 6800 m. The CTD is mounted on a 24-bottle General Oceanics rosette.
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Description	The Sea-Bird SBE 911plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911plus includes the SBE 9plus Underwater Unit and the SBE 11plus

	Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9plus and SBE 11plus is called a SBE 911plus. The SBE 9plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3plus and SBE 4). The SBE 9plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

Instrument	Fluorometer
Description	Calibration page for first fluorometer. "The primary fluorometer was mis-calibrated (had the wrong scale factor in the calibration/processing file), so fluorescence data from the first four (or five) stations (Stns #22, #7, #8, #11) had to be re-processed with the correct scaling factor. Examination of the *.cnv file showed which casts had the miscalibrated data, as the max reading for fluorescence was ~ 0.05 mg/m3. For nearly every other station, maximum fluorescence readings were > 1.0 mg/m3. A secondary fluorometer was added to the CTD rosette between Stns #11 and #12, which verified that the issue was with the scale factor in the CTD processing software." (from Cruise Report) The Default Scale Factor in the Calibration sheet, 25, is the correct scale factor and was not the one used for the first four CTDs. (2,3,5,6 from stations 22,7,8,and 11, respectively) The fluorescence in those casts should not be used until corrected.
Generic Instrument Name	Wet Labs ECO-AFL/FL Fluorometer
Generic Instrument Description	The Environmental Characterization Optics (ECO) series of single channel fluorometers delivers both high resolution and wide ranges across the entire line of parameters using 14 bit digital processing. The ECO series excels in biological monitoring and dye trace studies. The potted optics block results in long term stability of the instrument and the optional anti-biofouling technology delivers truly long term field measurements. more information from Wet Labs